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*Indian Standard*  
METHOD FOR ESTIMATION  
OF STRENGTH (VAT CONTENT) OF  
SOLUBILIZED VAT DYESTUFFS

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BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## METHOD FOR ESTIMATION OF STRENGTH (VAT CONTENT) OF

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# *Indian Standard*

## METHOD FOR ESTIMATION OF STRENGTH (VAT CONTENT) OF SOLUBILIZED VAT DYESTUFFS

### 0. F O R E W O R D

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 30 November 1970, after the draft finalized by the Dyestuffs Sectional Committee had been approved by the Textile Division Council.

**0.2** Solubilized vat dyestuffs are increasingly being used in the industry for dyeing and printing of fabrics. The strength of solubilized vat dyes is generally determined by comparison with an agreed standard by dyeing test which creates difficulties in reporting records of production, import or export statistics, or comparing dyes where due to slight shade difference the assessment of strength by dyeing method becomes difficult. To overcome this difficulty, this standard has been prepared to determine the strength by gravimetric method which agrees with the dyeing tests. The method prescribed is applicable to individual dyes but not to a mixture of dyes. It takes care of dyes which are precipitated due to over oxidation. However, it may not be very much suitable for dyes which are partially oxidized and pass through the filtering media.

**0.3** In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960\*.

### 1. SCOPE

**1.1** This standard prescribes a gravimetric method for the estimation of strength (vat content) of homogeneous solubilized vat dyestuffs.

### 2. SAMPLING

**2.1** All the containers of the dyestuffs of same designation and strength delivered to a buyer against a despatch note shall constitute a lot.

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\*Rules for rounding off numerical values (*revised*).

**2.2** Unless otherwise agreed to between the buyer and the seller, the number of containers to be selected at random from the lot shall be as given below:

<i>Lot Size</i>	<i>Sample Size</i>
Up to 25	2
26 to 50	3
51 „ 150	5
151 and above	7

**2.3** Draw small quantities of dye by suitable sampling instrument from at least 3 different parts of each container and mix them thoroughly to get a composite sample of desired weight.

### 3. APPARATUS AND REAGENTS

**3.1 Sintered Glass Funnel and Crucible** — porosity G 4.

**3.2 Distilled Water** — See IS : 1070-1960\*.

**3.3 Sodium Nitrite Solution** — 10 percent (*w/v*).

**3.4 Dilute Sulphuric Acid** — prepared by diluting 10 ml of concentrated sulphuric acid to 100 ml.

**NOTE** — Unless specified otherwise, pure chemicals shall be used in the tests.  
 ‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the test results.

### 4. PROCEDURE

**4.1** Take about 2 g of solubilized vat dyestuff and weigh it accurately. Dissolve the dyestuff in 200 ml of distilled water at 60°C. Filter the solution while hot through sintered glass funnel of porosity G4 type and wash the funnel with hot distilled water until the dissolved dyestuff goes into the filtrate.

**4.2** Add 10 ml of sodium nitrite solution and 10 ml of dilute sulphuric acid to the solution obtained as in **4.1**. Boil for 5 minutes and filter it through a previously weighed sintered glass crucible of porosity G4 type. Wash the residue on the crucible with distilled water till free from acid using an appropriate indicator, such as bromocresol purple. Dry the crucible along with the residue at  $100 \pm 3^\circ\text{C}$  to constant weight. Determine the weight of the residue.

**4.3** Repeat the test with at least two more test specimens.

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\*Specification for water, distilled quality (*revised*).

## 5. CALCULATIONS

**5.1** Calculate the strength of the solubilized vat dyestuff by the following formula:

$$P = \frac{W_2}{W_1} \times 100$$

where

$P$  = percentage by weight of the vat content of solubilized vat dyestuff,

$W_2$  = weight in g of the residue obtained as in **4.2**, and

$W_1$  = weight in g of the solubilized vat dyestuff taken for the test (see **4.1**).

**5.2** Similarly, calculate the strength of the other test specimens and calculate the average of the results.

## 6. REPORT

**6.1** The report shall include the following:

- a) Strength of dyestuff, and
- b) Number of tests.

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